**WE CLAIM:**

1. A bipolar junction transistor (BJT), comprising:

a BJT structure, comprising:

a semi-insulating substrate,

a subcollector formed on said substrate,

a collector formed on said subcollector,

a first metal contact on said subcollector which provides a collector contact for said BJT,

a base formed on said collector,

an emitter formed on said base,

a second metal contact on said emitter which provides an emitter contact for said BJT;

a first support post formed on said substrate which is physically and electrically isolated from said BJT structure; and

a third metal contact which extends from the top of said support post to the edge of said base nearest said support post, thereby bridging the physical and electrical separation between said first support post and said base and providing a base contact for said BJT.

2. The BJT of claim 1, wherein said semi-insulating substrate is a compound semiconductor.

3. The BJT of claim 1, wherein said semi-insulating substrate comprises indium phosphide (InP).

4. The BJT of claim 1, wherein said base contact extends over the edge of said base by about X μm, where X is the transfer length associated with the process used to fabricate the BJT.

5. The BJT of claim 1, wherein said support post is formed simultaneously with said BJT structure, said support

post comprising:

a first layer on said substrate, said first layer comprising the material which comprises said subcollector;

a second layer on said first layer, said second layer comprising the material which comprises said collector; and

a third layer on said second layer, said third layer comprising the material which comprises said base.

6. The BJT of claim 1, wherein said base contact is approximately comb-shaped having a top portion and periodically-spaced teeth extending perpendicularly from said top portion, said top portion of said comb-shaped base contact contacting said base and said teeth extending from said top portion to said first support post.

7. The BJT of claim 1, further comprising:

a second support post formed on said substrate which is physically and electrically isolated from said BJT structure and is located on the opposite side of said BJT structure from said first support post; and

a fourth metal contact which extends from the top of said second support post to the edge of said base nearest said support post, thereby bridging the physical and electrical separation between said second support post and said base and providing a second base contact for said BJT.

8. The BJT of claim 1, wherein said subcollector comprises indium phosphide (InP) or indium gallium arsenide (InGaAs).

9. The BJT of claim 1, wherein said collector comprises indium phosphide (InP), indium gallium arsenide (InGaAs), indium aluminum arsenide (InAlAs), or indium

aluminum arsenide phosphide (InAlAsP).

10. The BJT of claim 1, wherein said base comprises indium gallium arsenide (InGaAs).

11. The BJT of claim 1, wherein said emitter comprises indium phosphide (InP) or indium aluminum arsenide (InAlAs).

12. The BJT of claim 1, wherein said semi-insulating substrate is a compound semiconductor and said BJT structure is arranged to form a heterojunction bipolar transistor (HBT).

13. A heterojunction bipolar transistor (HBT), comprising:

an HBT structure, comprising:

a semi-insulating substrate comprising a compound semiconductor,

a subcollector formed on said substrate,

a collector formed on said subcollector,

a first metal contact on said subcollector which provides a collector contact for said HBT,

a base formed on said collector,

an emitter formed on said base,

a second metal contact on said emitter which provides an emitter contact for said HBT;

a first support post formed on said semi-insulating substrate which is physically and electrically isolated from said HBT structure, said first support post comprising:

a first layer on said substrate, said first layer comprising the material which comprises said subcollector;

a second layer on said first layer, said

second layer comprising the material which comprises said collector; and

a third layer on said second layer, said third layer comprising the material which comprises said base; and

a third metal contact which extends from the top of said support post to the edge of said base nearest said support post, thereby bridging the physical and electrical separation between said support post and said base and providing a base contact for said HBT, said base contact extending over the edge of said base by about X μm, where X is the transfer length associated with the process used to fabricate the HBT.

14. The HBT of claim 13, wherein said semi-insulating substrate comprises indium phosphide (InP).

15. The HBT of claim 13, wherein said base contact is approximately comb-shaped having a top portion and periodically-spaced teeth extending perpendicularly from said top portion, said top portion of said comb-shaped base contact contacting said base and said teeth extending from said top portion to said first support post.

16. The HBT of claim 13, further comprising:

a second support post formed on said substrate which is physically and electrically isolated from said HBT structure and is located on the opposite side of said HBT structure from said first support post; and

a fourth metal contact which extends from the top of said second support post to the edge of said base nearest said support post, thereby bridging the physical and electrical separation between said second support post and said base and providing a second base contact for said HBT.

17. The HBT of claim 13, wherein said subcollector comprises indium phosphide (InP) or indium gallium arsenide (InGaAs).

18. The HBT of claim 13, wherein said collector comprises indium phosphide (InP), indium gallium arsenide (InGaAs), indium aluminum arsenide (InAlAs), or indium aluminum arsenide phosphide (InAlAsP).

19. The HBT of claim 13, wherein said base comprises indium gallium arsenide (InGaAs).

20. The HBT of claim 13, wherein said emitter comprises indium phosphide (InP) or indium aluminum arsenide (InAlAs).

21. A heterojunction bipolar transistor (HBT), comprising:

an HBT structure, comprising:

a semi-insulating substrate comprising indium phosphide (InP),

a subcollector formed on said substrate,

a collector formed on said subcollector,

a first metal contact on said subcollector which provides a collector contact for said HBT,

a base formed on said collector,

an emitter formed on said base,

a second metal contact on said emitter which provides an emitter contact for said HBT;

first and second support posts formed on said semi-insulating substrate on opposite sides of said HBT structure, each of said support posts physically and electrically isolated from said HBT structure, each of said support posts comprising:

a first layer on said substrate, said first layer comprising the material which comprises said subcollector;

a second layer on said first layer, said second layer comprising the material which comprises said collector; and

a third layer on said second layer, said third layer comprising the material which comprises said base;

a third metal contact which extends from the top of said first support post to the edge of said base nearest said first support post, thereby bridging the physical and electrical separation between said first support post and said base and providing a first base contact for said HBT; and

a fourth metal contact which extends from the top of said second support post to the edge of said base nearest said second support post, thereby bridging the physical and electrical separation between said second support post and said base and providing a second base contact for said HBT;

wherein each of said base contacts is approximately comb-shaped having a top portion and periodically-spaced teeth extending perpendicularly from said top portion, the top portion of said first base contact contacting a first edge of said base and the top portion of said second base contact contacting an edge of said base opposite said first edge and said teeth extending from the top portions of said first and second base contacts to said first and second support posts, respectively, with each of said base contacts extending over the edge of said base by about X μm, where X is the transfer length associated with the process used to fabricate the HBT.

22. A method of forming a bipolar junction transistor (BJT), comprising:

providing a semi-insulating substrate,

depositing a layer of material suitable for use as a BJT subcollector on said substrate,

depositing a layer of material suitable for use as a BJT collector on said subcollector layer,

depositing a layer of material suitable for use as a BJT base on said collector layer,

depositing a layer of material suitable for use as a BJT emitter on said base layer,

patterning and etching said layers to provide a vertical gap between said layers down to said substrate, such that the layers on either side of said gap are physically and electrically isolated from each other,

patterning and etching said layers on one side of said gap to provide a BJT structure comprising a subcollector, a collector, a base, and an emitter, the layers on the other side of said gap forming a first support post, and

depositing and patterning a metal layer to provide a metal contact which extends from the top of said first support post to the edge of said base nearest said first support post, thereby bridging the physical and electrical separation between said first support post and said base and providing a base contact for said BJT.

23. The method of claim 22, wherein said metal layer is patterned such that said base contact extends over the edge of said base by about X μm, where X is the transfer length associated with the process used to fabricate the BJT.

24. The method of claim 22, further comprising:

patterning and etching said layers to provide a

second vertical gap between said layers down to said substrate on the opposite side of said BJT structure from said first support post, the layers on the opposite side of said second gap from said BJT structure forming a second support post which is physically and electrically isolated from said BJT structure; and

depositing and patterning said metal layer to provide a fourth metal contact which extends from the top of said second support post to the edge of said base nearest said second support post, thereby bridging the physical and electrical separation between said second support post and said base and providing a second base contact for said BJT.

25. The method of claim 22, wherein said semi-insulating substrate is a compound semiconductor.

26. The method of claim 22, wherein said semi-insulating substrate comprises indium phosphide (InP).

27. The method of claim 22, further comprising the depositing, patterning, and etching of a second metal layer to provide a collector contact for said BJT, and depositing, patterning, and etching of a third metal layer to provide an emitter contact for said BJT.

28. A method of forming a bipolar junction transistor (BJT), comprising:

providing a semi-insulating substrate,

depositing a layer of material suitable for use as a BJT subcollector on said substrate,

depositing a layer of material suitable for use as a BJT collector on said subcollector layer,

depositing a layer of material suitable for use as a BJT base on said collector layer,

depositing a layer of material suitable for use as a BJT emitter on said base layer,

depositing, patterning, and etching a first metal layer to provide an emitter contact for said BJT,

patterning and etching said emitter layer to form an emitter below said emitter contact,

depositing, patterning, and etching a second metal layer to provide a base contact for said BJT,

patterning and etching said base and collector layers to form a base and a collector below said emitter, and to define the upper portion of a support post which is physically separate from said emitter, base, and collector, said base contact extending from the top of said support post to the edge of said base nearest said support post, thereby bridging the physical separation between said support post and said base,

depositing, patterning, and etching a third metal layer to provide a collector contact for said BJT, and

patterning and etching said subcollector layer to form a subcollector below said collector, and to define a lower portion of said support post which is physically separate from said emitter, base, collector, and subcollector.

29. The method of claim 28, further comprising:

depositing a layer of material suitable for use as a BJT emitter cap on said emitter layer immediately after depositing said emitter layer, and

patterning and etching said emitter cap layer along with said emitter layer to form said emitter.

30. The method of claim 28, wherein said semi-insulating substrate comprises indium phosphide (InP).